

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION

A2SO
Revision 4
LOCKHEED
300-50A-01 (USAF C-141A)
October 25, 2001

TYPE CERTIFICATE DATA SHEET NO. A2SO

This data sheet, which is a part of Type Certificate No. A2SO, prescribes conditions and limitations under which the product for which the type certificate was issued meets the airworthiness requirements of the Civil Air Regulations.

Type Certificate Holder	Lockheed Martin Corporation Lockheed Martin Aeronautics Company 86 S. Cobb Drive Marietta GA 30063
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I - Model 300-50A-01 (USAF C-141A) (Cargo transport aircraft), approved January 29, 1965.

See Note 4 for explanation of model configuration.

Engines	4 Pratt and Whitney turbofan TF33-P-7 with anti-icing regulator assembly, P/N 476015GI, and heated P _{T2} probes
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Fuel	MIL-J-5624E, grades JP-4 and JP-5, and fuel conforming to Pratt and Whitney Specification No. 522D or later revisions.
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Oil	MIL-L-7808D
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Engine limits	<u>Static thrust, standard day, sea level</u> Take-off (5 min.) 21,000 lbs. Maximum continuous 18,000 lbs. <u>Maximum permissible engine rotor operating speed</u> Low pressure compressor (N ₁) 6,870 High pressure compressor (N ₂) 10,095
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Maximum permissible temperature

(1) <u>Turbine outlet - gas</u>			
Take-off (5 min.)	555°C	1030°F	
Maximum continuous	488°C	910°F	
Maximum acceleration (2 min.)	555°C	1030°F	
Starting (momentary)	454°C	850°F	
(2) Oil inlet (continuous operation) 121°C 250°F			

Maximum permissible air bleed extraction

		<u>% of primary engine airflow</u>
(1) <u>Normal</u>		
Take-off		3.5%
Maximum continuous and below		6.5%
(2) <u>Intermittent</u>		
At take-off		5.8%
At idle through maximum continuous		7.7%

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Airspeed limits (calibrated)	<u>V_{mo} (maximum operating)</u>	
	Sea level to 25,000 ft.	350K
	M _{mo} = .825 at 25,000 ft. and above	
	<u>V_a (maneuvering)</u>	
	For maneuvering speed variation, refer to FAA approved Airplane Flight Manual	
	<u>V_{fe} (flap extended speeds)</u>	
	(1) Flap deflection 0% to 88% (take-off and approach position)	
	Sea level to 24,200 ft.	200K
	.48M above 24,200 ft.	
	(2) Flap deflection 88% to 100% (landing position)	
	Sea level to 24,700 ft.	185K
	.45M above 24,700 ft.	
	<u>V_b (rough air gust speed)</u>	
	Sea level to 36,800 ft.	270K
	M _b = .825 at 36,800 ft. and above	
Heated windshield limits	<u>V_{lo} (landing gear operating)</u>	
	Sea level to 24,200 ft.	200K
	M _{lo} = .48 at 24,200 ft. and above	
	<u>V_{le} (landing gear extended)</u>	
	Sea level to 23,200 ft.	235K
	M _{le} = .550 at 23,200 ft. and above	
	<u>V_{ll} (landing light extended)</u>	
	Sea level	320K
	M _{ll} = .53 above 5,000 ft.	
	<u>V_{mc} (minimum control speed, air)</u>	
	Refer to FAA approved Airplane Flight Manual	
	<u>V (spoilers)</u>	
	(1) Normal operating	
	Sea level to 19,800 ft.	350K
	.75M at 19,800 ft. and above	
	(2) Spoilers minimum speed	
	Refer to FAA approved Airplane Flight Manual	
	<u>V (fuel jettison speed)</u>	
	All speeds up to V _{mo} - M _{mo}	
	V (tire speed limit) (ground speed)	174K
	If electric windshield heat is operative, it must be used for all flight operations. Operation without electric windshield heat is permissible provided:	
	(1) The airplane is not flown in known icing conditions.	
	(2) The maximum speed limit for flight below 10,000 ft. is	
	(a) 250 KCAS if the center windshield heat is inoperative.	
	(b) 350 KCAS if the pilot's or co-pilot's windshield heat is inoperative.	

C.G. range When the aircraft is loaded such that its zero fuel weight with the landing gear down is within the envelope depicted by Figure 2, the aircraft center of gravity will remain within the approved center of gravity limits (Figure 1) when fuel is loaded (up to maximum gross weight) and used in the approved sequence. See Notes 1(b) and 1(d).

Datum 230.4 inches forward of the nose. Nose is fuselage station 230.40.

M.A.C. 265.7 inches, leading edge M.A.C., F. S. 858.9

Leveling means A plumb-bob attachment is located overhead in the cargo compartment at F.S. 956.5, 102 inches from the floor on the left side. A leveling grid is directly below the plumb-bob fitting on the left walkway. See Lockheed drawing 3M00012 for aircraft jacking.

Maximum weight	Ramp weight	318,000 lbs.	(1)
	Take-off weight	316,600 lbs.	(1)
	Airborne weight	316,100 lbs.	(1)
	Landing weight	257,500 lbs.	(2) & (4)
	Maximum zero fuel weight	204,620 lbs.	(3)

- (1) All weight in excess of maximum zero fuel weight must consist of usable fuel and usable oil. All weight in excess of 257,500 lbs. must consist of jettisonable fuel.
- (2) Fuel jettison values are provided for operation in excess of the maximum landing weight. See Note 1(e).
- (3) This weight includes 138 lbs. of usable oil.
- (4) Do not land with a total fuel weight of more than 75,000 lbs.

Minimum crew Three (3) - Pilot, Co-pilot, and Flight Engineer
See Note 5

Maximum passengers 79 - limited by emergency exit requirements when operated over land. For over water operation, a maximum of 8 occupants may be carried aboard airplane (see Certification Basis).

Cargo Compartment	Capacity lbs.	Max. Loading	
		lb/ft ²	lb/ft
482-678	-	300	2000
678-998	-	400	3000
998-1292	-	300	2000
1292-1398	(2)	200	1000
Totals	(1)		

(1) Maximum cargo loading is limited to 72,131 lbs.

(2) Maximum total lbs. that can be placed in the ramp area is 7,500.

Fuel Capacity	Tank	Total Gal. Ea.	Total Max. Lbs.	Usable Each Tank		Arm
				Gal.	Max. Lbs.	
	2 outboard main (#1 & #4)	1,260	8,193	1,229 (1)(3)	7,986 (1)(3)	1136.04
	2 outboard aux. (#1 & #4)	2,572	16,716	2,570	16,704	1020.0
	2 extended range (LH & RH)	4,141	26,915	4,129	26,836	922.6
	2 inboard aux. (#2 & #3)	1,701	11,056	1,696	11,022	916.4
	2 inboard main (#2 & #3)	2,176	14,142	2,167 (3)	14,083 (3)	818.5
	Plumbing (both sides)	78	506	14	90 (2)	904.0
	Aircraft Total	23,777	154,550	23,593 (3)	153,351(1)(3)	

(1) Usable fuel in each outboard main tank will be increased 93.2 lbs., or 14.3 gal. per tank (186.4 lbs., 28.6 gals. per airplane) by incorporation of ECP-471P, T.C.T.O.-1-C-141A-853. Drawings affected are 3W31011, Rev. G; 3W31729, Rev. A; and 3W00021, Rev. B.

(2) This fuel recoverable as follows:

28 lbs. from each outboard main tank to engine plumbing.
17 lbs. from each inboard main tank to engine plumbing.

(3) For airplanes with the one main tank booster pump system, and with ECP 471 P incorporated (see (1) above) the usable fuel will be: 1213 gal. and 7885 lbs. for the #1 and #4 main tanks, 2163 gal. and 14,062 lbs. for the #2 and #3 main tanks and 23,555 gal. and 153,108 lbs. for the aircraft total.

Fuel weights are based on fuel density of 6.5 lbs/gal. These weights are shown to the nearest pound. Gross weights and weights shown must not be exceeded when using fuel with a greater density.

See Note 1(c) for unusable system fuel, Note 1(d) for fuel loading and usage procedures, and Note 1(e) for jettisonable fuel.

Oil capacity	Total Gal.	Total Lbs.	Usable
	<u>per tank</u>	<u>per tank</u>	<u>Lbs/tank</u>
Four engine tanks	4.59	34.4	30.68
Constant speed drive tank	1.16	8.7	

See Note 1(c) for system oil. Oil weight based on 7.5 lbs. per gallon.

Maximum operating altitude 40,000 ft.

Other operating limits See FAA approved Airplane Flight Manual.

Control & rigging Control surface movements and rigging instructions for the following systems are shown on the following FAA approved drawings.

<u>Nomenclature</u>	<u>Lockheed Drawing</u>
Aileron	3C03027
Brakes & Rudder	3C03003
Elevator	3C03004
Emergency Depressurization System	3C03921
	3E11794
	3F42163
Emergency Fuel Shut-off	3C03006
Emergency Landing Gear	
NLG release	3C03010
MLG release	3C03012
Flaps	3C03023
Horizontal Stabilizer & Pitch Trim	3C03028
Landing Gear, Nose	3G60207
Landing Gear, Main	3G10207
Nose Wheel Steering	3C03014
Pressure Door, Aft	3F42008
Ramp Cargo Door	3F42007
Rear Cargo Door, Petal	3F42009
Spoiler	3C24741
Throttle	3C03005
Thrust Reversers	3P22578

Serial Nos. eligible 6001 and up

Certification basis	<p>Application for Type Certificate dated March 16, 1961. CAR 1 dated October 1, 1955, including Amendments through 1-4 effective December 31, 1960.</p> <p>CAR 4b dated December 31, 1953, including Amendments through 4b-11 effective October 1, 1959, and paragraph 4b.307 of Amendment 4b-12 effective May 3, 1962.</p> <p>CAR 13 paragraph 13.260, 13.260(a), 13.252(a), 13.252(b), 13.254, 13.255, June 15, 1956, including Amendments 13-3 effective October 1, 1959, and paragraph 13.260(a) of Amendment 13-4 effective May 3, 1962.</p> <p><u>Airplane and equipment requirements:</u> SR-422B dated July 9, 1959, corrected July 15, 1959.</p> <p>SR-424C dated August 30, 1960 (now FAR 91 effective September 30, 1963, paragraph 91.97).</p> <p>SR-440 dated June 7, 1960.</p> <p>SR-444 dated February 14, 1961 (now FAR 91 effective September 30, 1963, paragraph 91.99).</p> <p>SR-450A dated August 31, 1962, through Amendment 2 dated August 1, 1964.</p> <p><u>For cargo only operations:</u> CAR 40 dated September 14, 1959, including Amendments through 40-38.</p> <p>CAR 41 dated April 15, 1955, including Amendments 41-38.</p> <p>CAR 42 dated December 15, 1954, including Amendments through 42-44.</p> <p>For operations that involve the carrying of passengers: FAR 91 dated September 30, 1963, Change 14 dated January 10, 1966.</p> <p>Type Certificate No. A2SO issued January 29, 1965.</p> <p>Compliance with the following optional requirements has been established.</p> <p>Ditching provisions approved for a maximum of eight occupants (two 7-man life rafts and emergency equipment secured to crew upper bunk). CAR 4b.361.</p> <p>Ice protection provisions. CAR 4b.640.</p>
Production basis	Production Certificate No. 205
Required equipment	<p>The basic required equipment as prescribed in the applicable airworthiness regulations (see Certification Basis) must be installed in the aircraft for certification. Lockheed Report ER 5786, Part I, "Master Equipment List, Model 300-50A-01 (USAF C-141A)," be installed, as well as optional equipment installations approved by the FAA.</p> <p>The "FAA approved Airplane Flight Manual for the Lockheed Model 300- 50A-01 (USAF C-141A) airplane equipped with Pratt & Whitney TF33-P-7 engines" as revised August 30, 1965, is also required.</p> <p>Appendix I dated March 7, 1968, to the approved flight manual is required when the aircraft configuration incorporates one fuel pump per main tank. (See Note 11).</p>
Service information	Lockheed Model 300-50A-01 (USAF C-141A) Operation and Maintenance Instructions, Service Bulletins, and other service information, when FAA approved, will carry a statement to that effect.

- Note 1. (a) The Handbook of Weight and Balance Data for the Models 300-50A-01 contains current weight and balance data, a list of installed equipment, and loading instructions. A current weight and balance report, including a list of equipment included in the certificated empty weight, and loading instructions when necessary, must be in each aircraft at the time of original certification and at all times thereafter except in the case of operators having an approve weight control system.
- (b) The airplane must be loaded so that the zero fuel weight c.g. is within the specified limits. See Figure 2.
- (c) The weight of system fuel and trapped oil, as defined below and as listed in the Handbook of Weight and Balance Data for the Model 300-50A-01 airplane, must be included in the airplane empty weight.

System Fuel (total unusable fuel): The weight of all fuel which is unavailable to the engines, the weight of fuel remaining in the aircraft when the engines have consumed fuel down to the zero point on the fuel gauges, the sum of "drainable unusable fuel" and "trapped unusable fuel" as defined below.

Drainable Unusable Fuel: The weight of fuel which can be drained from the airplane by the normal procedure prescribed by the Handbook of Weight and Balance Data for the Model 300-50A-01 airplane, but which is unavailable to the engines under flight conditions as prescribed by CAR 4b.416.

Trapped Unusable Fuel: The weight of fuel which can neither be drained by the normal procedures prescribed by the Handbook of Weight and Balance Data for the Model 300-50A-01 airplane, nor consumed by the engines under flight conditions as prescribed by CAR 4b.416.

	<u>Lbs. per Airplane (1)</u>	<u>Gal. per Airplane</u>
<u>Drainable Unusable Fuel</u>		
No. 1 & No. 4		
Main tanks	391.6(2)(3)	60.2
Auxiliary tanks	17.0	2.6
No. 1 & No. 2		
Extended range tanks	94.0	14.5
No. 2 & No. 3		
Auxiliary tanks	43.0	6.6
Main tanks	97.3(3)	15.0
<u>Trapped Unusable Fuel</u>		
No. 1 & No. 4		
Main tanks	21.46	3.35
Auxiliary tanks	7.34	1.13
No. 1 & No. 2		
Extended range tanks	64.98	10.00
No. 2 & No. 3		
Auxiliary tanks	24.8	3.82
Main tanks	19.56	3.00
Fuel lines (engine feed line fuel is usable by the engines)	416.49	64.08
System Fuel (total unusable fuel)	<u>1197.53(2)(3)</u>	<u>184.3</u>

(1) Fuel weights fare based on a density of 6.5 lbs. per gal.

(2) Drainable unusable fuel in the No. 1 and No. 4 main tanks will be decreased by 93.2 lbs. per tank, 186.4 lbs. per airplane, by incorporation of ECP- 471P,T.C.T.O.-1-C-141A-853. Drawings affected are 3W31011, Rev. G, 3W31729, Rev. A, and 3W00021, Rev. B. The resulting system fuel (total unusable fuel) is 1011.13 lbs. per airplane.

- (3) *For airplanes with the one main tank booster pump system, and with ECP-471 P incorporated (see (2) above) the drainable unusable fuel will be 593.0 lb. for the No. 1 and No.4 main tanks (total) and 139.6 lb. for the No. 2 and No. 3 main tanks (total), and the total unusable system fuel will be 1441.23 lb. per airplane.*

Trapped Oil: The weight of engine oil remaining in the aircraft after draining oil from drain valve at bottom of each oil tank, plus total constant speed drive oil.

	<u>Pounds</u>	<u>Arm</u>
Constant speed drive oil (total)	109.0	770.2
Engine Oil (trapped)	<u>69.0</u>	<u>780.0</u>
Trapped Oil	178.0	774.0

- (d) Fuel loading and usage procedures are dictated by the requirements of structural design and the necessity to maintain airplane c.g. within approve limits. Refer to the FAA approved Airplane Flight Manual for take-off, landing, and normal fuel distribution limitations; normal fuel system management; and fuel system malfunction procedures.

Fuel must be loaded symmetrically above the airplane centerline.

- (e) Fuel jettison. Fuel jettisoning must be available for operation of the airplane in excess of the maximum landing weight. The unjettisonable fuel must be included in the airplane landing weight, and the amount of usable fuel remaining in the tanks after complete jettisoning is as follows.

All tanks

Outboard main	Nos. 1 & 4	13,624 lbs. 6,812 lbs. per tank
Outboard auxiliary	Nos. 1 & 4	11,000 lbs. 5,500 lbs. per tank
Extended range	LH & RH	1,500 lbs. 750 lbs. per tank
Inboard auxiliary	Nos. 2 & 3	700 lbs. 350 lbs. per tank
Inboard main tanks		25,796 lbs. 12,898 lbs. per tank

- (f) All airplanes must be weighted (actually weighted, rather than weight computed) prior to receiving an airworthiness certificate of civil operation.

Note 2 Reserved.

Note 3 All replacement seats (crew, observer, and lounge), although they may comply with TSO- C39, must also be demonstrated to be in compliance with the vertical gust load factors in CAR 4b.211(b) which exceed the TSO requirements. Other installations such as berths, buffets, compartments, or items of mass which could create a hazard to the safety of the crew, must also be demonstrated to meet the same requirements.

Note 4 The basic model number of the certificated aircraft is 300 (C-141A). The nameplate and certain documents contain two additional sets of numbers; the first set represents the engine, and the second set represents the type of interior at the time of issuance of the original airworthiness certificate.

Example. 300-50A-01 (USAF C-141A) contains a TF33-P-7 engine and has a cargo interior with tie-downs.

Note 5 (a) When special navition equipment is required for flight operation, the airplane must be operated with a minimum crew of four, the pilot, co-pilot, flight engineer, and navigator.

(b) When weather radar equipment is required for flight operation, the airplane must be operated with a minimum crew of four, the pilot, co-pilot, flight engineer, and qualified crew member.

- Note 6 S/N 6001 - 6004 require inspection of the horizontal stabilizer rear spar fitting (drawing 3T33011) for stress corrosion damage. Inspection procedures are contained in Lockheed Engineering Report No. ER 7698.
- Note 7 S/N 6001 and subsequent aircraft require inspection of the center fuselage (F.S. 958- 998) for fatigue cracks. Inspection procedures are contained in Lockheed Engineering Report No. ER 7698.
- Note 8 Phillips PFA-55MB anti-icing additive is approved for use at concentrations not in excess of 0.15% by volume.
- Note 9 The aircraft and its systems must be inspected, adjusted, and calibrated in accordance with the referenced data contained in Lockheed Engineering Report No. ER 7698, or by other means acceptable to the FAA Southern Region, Engineering and Manufacturing Branch.
- Note 10 The AWLS (All Weather Landing System) equipment contained in and installed per Lockheed-Georgia Company ER-9543, "C-141A AWLS and Vertical Navigation System Master Drawing List", has been demonstrated to comply with the Category II performance criteria contained in Advisory Circular No. 120-20. FAA approved Lockheed C-141 AFM Supplement dated October 6, 1967, is required as part of this installation.
- Note 11 Aircraft are eligible for operation with only one fuel booster pump in each main tank when the aircraft is modified in accordance with data shown on Lockheed drawing 3P18025.

DESIGN CENTER OF GRAVITY LIMITS

MAC = 265.7 inches

L.E. MAC = F.S. 858.9

Legend (C.G. Travel):

———— Flight Limits

----- Taxi & Jacking Limits

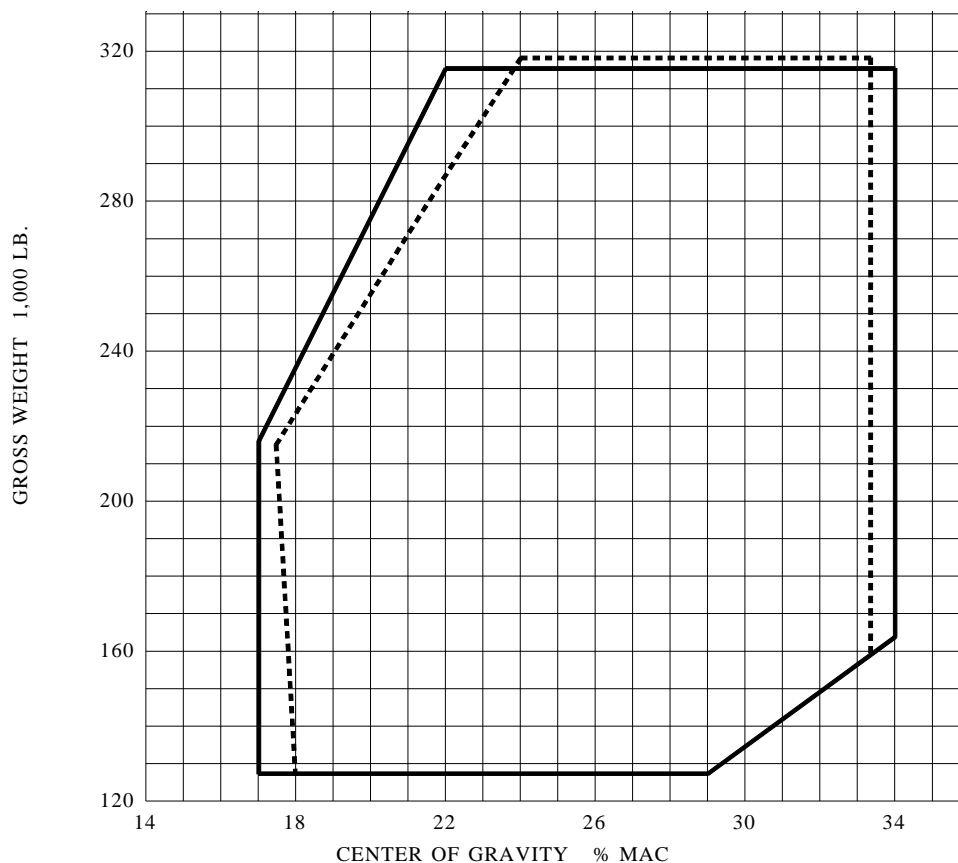




Figure 1.

**ALLOWABLE ZERO FUEL WEIGHT
CENTER OF GRAVITY ENVELOPE
LANDING GEAR DOWN**

MAC = 265.7

L.E. MAC = F.S. 858.9

-  Envelope for JP-4, JP-5, and Kerosene
-  Envelope extension for JP-4

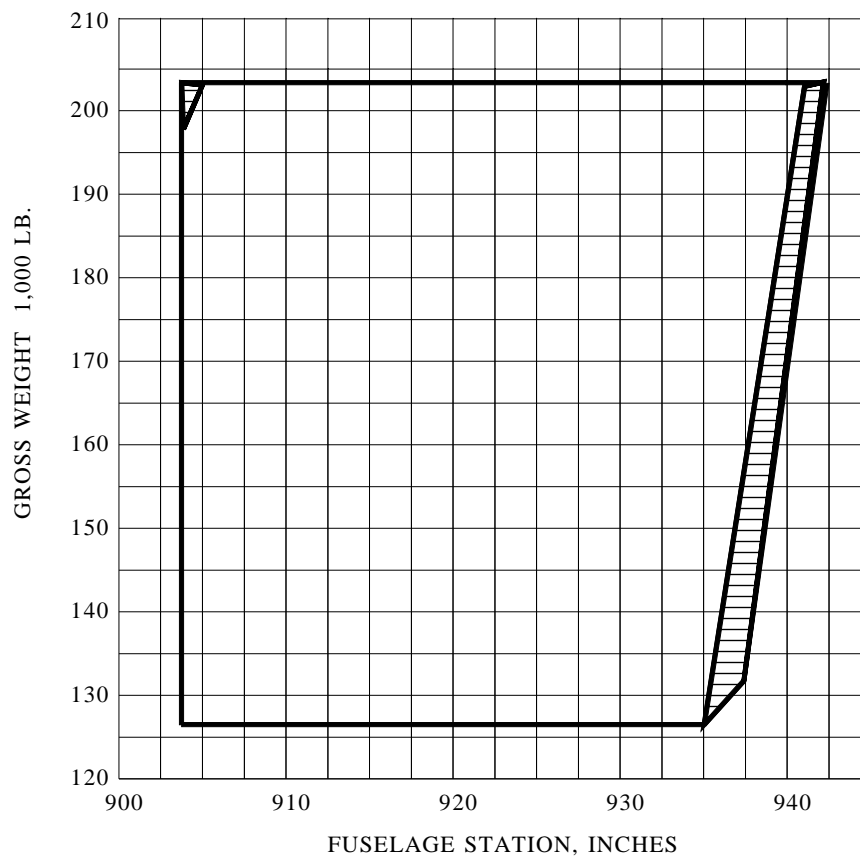


Figure 2.

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